Volunteer Lake Assessment Program Individual Lake Reports

BEECH POND, LOWER, TUFTONBORO, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	1,600	**Max. Depth (m):**	15.2	**Flushing Rate (yr^{-1}):**	0.8
Surface Area (Ac.):	155	**Mean Depth (m):**	6.8	**P Retention Coef:**	0.63
Shore Length (m):	4,700	**Volume (m^3):**	4,250,500	**Elevation (ft):**	968

TROPHIC CLASSIFICATION

Year	Trophic class
1980	OLIGOTROPHIC
2001	OLIGOTROPHIC

KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the DRAFT 2014 305(b) report on the status of N.H. waters, and are based on data collected from 2004-2013. Detailed waterbody assessment and report card information can be found at www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm

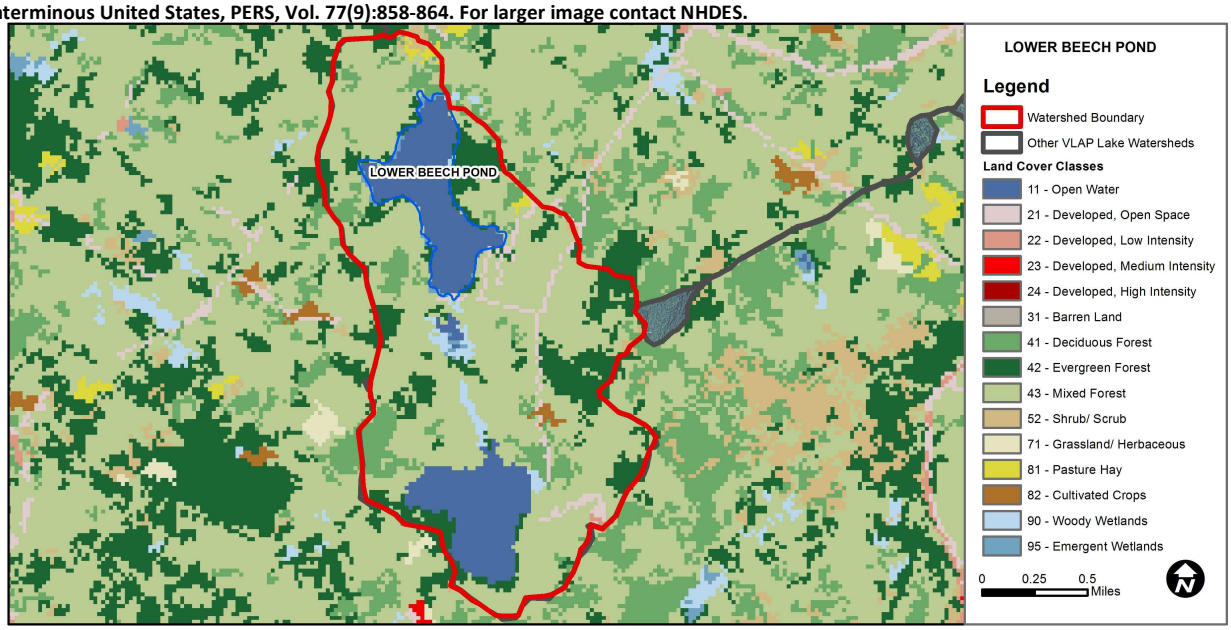
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Good	The calculated median is from 5 or more samples and is < indicator and > 1/2 indicator and the chlorophyll a indicator is okay.
	pH	Bad	>10%, with a minimum of 2, samples exceed criteria, with 1 or more by a large margin.
	Oxygen, Dissolved	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Dissolved oxygen satura	Encouraging	There are < 10 samples with 0 exceedances of criteria. More data needed.
	Chlorophyll-a	Good	The calculated median is from 5 or more samples and is < indicator and > 1/2 indicator.
Primary Contact Recreation	Escherichia coli	Very Good	Where there are no geometric means, all bacteria samples are < 75% of the geometric mean. Where there are geometric means all single bacteria samples are < the SSMC and all geometric means are < geometric mean criteria.
	Chlorophyll-a	Good	There are at least 10 samples with one, but < 10% of samples, exceeding indicator.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

LOWER BEECH POND - WILLIAM LAWRENCE CAMP BEACH	Escherichia coli	Good	There are geometric means and all geometric means are < geometric mean criteria; and there has been a single sample exceedance.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	17.6	Barren Land	0	Grassland/Herbaceous	0
Developed-Open Space	2.37	Deciduous Forest	7.5	Pasture Hay	0.42
Developed-Low Intensity	0.11	Evergreen Forest	15.44	Cultivated Crops	0.31
Developed-Medium Intensity	0	Mixed Forest	53.72	Woody Wetlands	1.57
Developed-High Intensity	0	Shrub-Scrub	0.44	Emergent Wetlands	0.59

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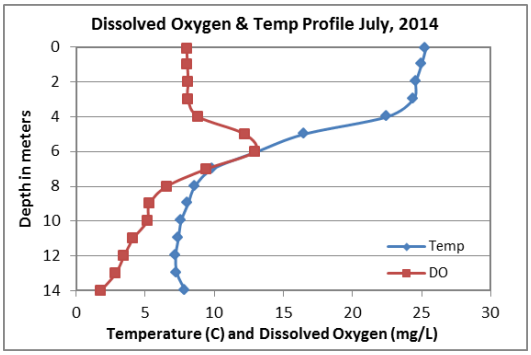
Lower Beech Pond, Tuftonboro

2014 Data Summary

Observations and Recommendations (*Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **Chlorophyll-a:** Chlorophyll levels were very low in June, increased slightly in July, and then decreased again in August. Average chlorophyll levels were much less than the state median. Historical trend analysis indicates highly variable chlorophyll levels since monitoring began.
- **Conductivity/Chloride:** Deep spot and tributary conductivity and chloride levels remained low. Historical trend analysis indicates stable epilimnetic (upper water layer) conductivity since monitoring began.
- **E. coli:** First Beach, Second Beach, Inlet, and Outlet E. coli levels were much less than the state standard of 88 cts/100 mL for public beaches and 406 cts/100 mL for surface waters on each sampling event.
- **Total Phosphorus:** Deep spot phosphorus levels were low and less than the state median. Epilimnetic phosphorus levels were the lowest measured since monitoring began and historical trend analysis indicates significantly decreasing (improving) epilimnetic phosphorus levels. We hope to see this continue! Metalimnetic (middle water layer) and Hypolimnetic (lower water layer) phosphorus levels were low. Inlet and Outlet phosphorus levels were very low on each sampling event.
- **Transparency:** Transparency improved slightly as the summer progressed and was the best measured since 2005. Transparency measured with the viewscope (VS) was higher than without and likely a better representation of actual conditions. Historical trend analysis indicates relatively stable transparency since monitoring began.
- **Turbidity:** Deep spot and tributary turbidities were low on each sampling event.
- **pH:** Epilimnetic and Metalimnetic pH levels were within the desirable range 6.5—8.0 units, however Hypolimnetic pH levels were less than desirable. Historical trend analysis indicates relatively stable Epilimnetic pH since monitoring began.
- **Recommended Actions:** Overall, water quality is very good and the improving epilimnetic phosphorus trend is encouraging. pH levels have fluctuated below desirable since monitoring began and could be potentially critical to aquatic life. Continue to educate lake and watershed residents on ways to reduce stormwater runoff into the pond. Keep up the great work!



NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: > 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: between 6.5-8.0 (unless naturally occurring)

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

Station Name	Table 1. 2014 Average Water Quality Data for LOWER BEECH POND									
	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Cond. uS/cm	E. Coli #/100ml	Total P ug/l	Trans. m		Turb. ntu	pH
							NVS	VS		
Epilimnion	3.83	2.03	5	31.5		3	5.52	6.32	0.51	6.88
Metalimnion				32.9		7			0.99	6.52
Hypolimnion				33.9		10			0.82	6.00
First Beach					2					
Inlet				32.6	10	3			0.60	6.73
Outlet				27.4	10	3			0.66	6.71
Second Beach					5					

Historical Water Quality Trend Analysis

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Stable	Trend not significant; data show low variability.	Chlorophyll-a	Stable	Trend not significant; data highly variable.
pH (epilimnion)	Stable	Trend not significant; data moderately variable.	Transparency	Stable	Trend not significant; data moderately variable.
			Phosphorus (epilimnion)	Improving	Data significantly decreasing.